

REMARKS/ARGUMENTS

**Claims Status**

Claims 1-4 and 6-18 are pending. Claims 1, 6 and 9 are currently amended. Claim 5 is canceled without prejudice. Claims 7 and 13-16 are withdrawn pursuant to a previous Restriction Requirement. Claim 1 is amended to include the subject matter of claim 5 as well to include a molar ratio of organic acid to metal alkoxide (see original claim 6 and paragraph [0016] of the specification as filed). Claim 6 is amended to remove a parenthetical notation objected to by the Office. Claim 9 is amended to correct “according to 8” to “according to Claim 8.” No new matter is believed to have been entered.

**§112, 2<sup>nd</sup> paragraph, Rejection**

Claim 6 is rejected as indefinite for its inclusion of a parenthetical notation. As noted above, this parenthetical has been removed from claim 6. Accordingly, Applicants request withdrawal of this rejection.

**§102(b)/§103(a) Rejection over Takahashi**

Claims 1-4 are rejected as anticipated by or, in the alternative, as obvious in view of Takahashi (US 2002/0000532). As independent claim 1 now includes the subject matter of claim 5 which is not subject to these alternate rejections over Takahashi, it is believed that the rejection over Takahashi alone has been rendered moot.

Applicants make no statement with respect to the propriety of the Takahashi ground of rejection and in no way acquiesce to the same. Solely to expedite examination, Applicants have included the subject matter of claim 5 in independent claim 1. As such, Applicants respectfully request withdrawal of the rejection over Takahashi alone.

**§103(a) Rejection over Takahashi and Russell**

Claims 5 and 6 are rejected as obvious in view of the combination of Takahashi (US 2002/0000532) and Russell (US 2,926,183). Applicants respectfully traverse this rejection.

The claimed invention, as recited in claims 1-4 and 6, relates to a composition for dispersing a particle, said composition obtained by mixing a metal alkoxide, an organic acid and water, wherein the organic acid is lactic acid, oxalic acid, citric acid and/or tartaric acid, and wherein the molar ratio of organic acid to metal alkoxide is (0.5-4):1 (see claim 1). Such particle dispersing compositions as those claimed can be used in, for example, ceramic materials, photocatalytic materials, optical materials and electronic materials (see [0001] of the specification as filed).

The composition of the present invention as recited in independent claim 1 includes an organic acid wherein the organic acid is specified as being lactic acid, oxalic acid, citric acid and/or tartaric acid, and the composition of independent claim 1 recites a specific molar ratio of the organic acid to the metal alkoxide.

Contrary to the claimed invention, Takahashi fails to disclose or suggest the use of the organic acids claimed (i.e., lactic acid, oxalic acid, citric acid and/or tartaric acid) and also fails to disclose or suggest the claimed molar ratio of organic acid to metal alkoxide. In fact, Applicants point out that Takahashi uses *amines* instead of the claimed acids and Takahashi explicitly discloses the “reason why the alkyl amines are used in the method of producing the titanium-containing aqueous solution” (see [0022], see also [0020]-[0021]).

In light of these deficiencies of Takahashi, one must consider the second cited reference, namely Russell. However, Applicants submit that, for at least the following reasons, Takahashi and Russell are not combinable, and even if they were combined, they would not render obvious the claimed invention.

Applicants point out that the specification of the present invention notes that Russell requires “conditions of high acid concentration” in order to obtain a stable aqueous solution containing titanium and lactic acid (see page 2, lines 6-9). In contrast to Russell, the Takahashi reference relates to low acid concentration reactions. Accordingly, Applicants submit that Russell and Takahashi are not properly combinable due to the functional/chemical natures of these references opposing one another (i.e., high acid concentration versus low acid concentration). Thus, since the Russell reference which relates to high acid concentration reactions is not properly combinable with the Takahashi reference which relates to low acid concentration reactions, the Office has failed to put forth a proper combination of references for a *prima facie* case of obviousness.

Notwithstanding the above, Applicants submit that one skilled in the art looking to the disclosure of Russell and its use of lactic acid and titanium in “conditions of high acid concentration” would *not* expect that such a combination would produce such a stable solution *outside of the high acid concentration conditions*. Therefore, Applicants submit that, given the stability of the titanium and lactic acid solution of Russell being the result of the high acid concentration, one skilled in the art would *not* expect such a solution to be stable at a low acid concentration, and therefore one skilled in the art would not consider combining Takahashi with Russell to form a titanium and lactic acid solution *at low acid concentration*. Accordingly, Applicants submit that even if one skilled in the art were to combine Takahashi and Russell by chance, the claimed invention is *not* rendered obvious by such a combination because one skilled in the art would have no expectation of success of obtaining a stable solution at a low acid concentration.

In light of the foregoing, Applicants request withdrawal of the obviousness rejection over the combination of Takahashi and Russell.

**§103(a) Rejection over Takahashi and Arney**

Claims 8-10, 12, 17 and 18 are rejected as obvious in view of the combination of Takahashi (US 2002/0000532) and Arney (US 6,432,526). Applicants respectfully traverse this rejection.

The claimed invention as recited in claims 8-12 relates to a composition having a particle dispersed therein, and relates to a process for producing the composition having a particle dispersed therein, as recited in claims 17 and 18.

Contrary to the claimed invention and as recognized by the Office, “Takahashi et al. do not expressly teach a composition having a particle dispersed therein” (Office Action, page 6, 2<sup>nd</sup> full paragraph). As such, the Office looks to the Arney reference to fulfill this deficiency of Takahashi. However, contrary to the Office’s allegations, Applicants submit that the combination of Takahashi and Arney does not render obvious the claimed invention for at least the following reasons.

Arney discloses colloids containing metal oxide particles that have dispersing aid *attached thereto* dispersed in an *organic liquid* wherein the dispersing aids can be organic (carboxylic) acids and wherein the colloids are “*substantially free of water*” (see col. 2, lines 58-62, col. 6, lines 46-53).

First, Applicants note that metal oxide particles having dispersing aids “*attached thereto*” are **not** equivalent to the metal ion and organic acid complex formed in the claimed invention (see page 8, [0010] of the specification as filed). Second, Applicants note that the claimed invention requires the presence of water (i.e., as a solvent) (see e.g., independent claim 1) which is contrary to the “*substantially free of water*” nature of Arney. Third, Applicants point out that Arney discloses metal oxide particles dispersed in *organic liquid* whereas Takahashi discloses titanium-containing *aqueous solution*.

In light of the foregoing, Applicants submit that the Office's reliance upon the colloids of Arney, alone or in combination with Takahashi, is misguided since Arney is wholly unrelated to the claimed invention or the solutions of Takahashi. Furthermore, Applicants submit that Takahashi and Arney are not combinable because Arney relates to metal oxide particles dispersed in an organic liquid wherein the colloids are substantially free of water, whereas Takahashi relates to titanium-containing aqueous solutions.

Accordingly, Applicants submit that the combination of Takahashi and Arney does not render obvious the claimed invention for at least these reasons. As such, Applicants request withdrawal of the obviousness rejection over the combination of Takahashi and Arney.

**§103(a) Rejection over Takahashi, Arney and Russell**

Claim 11 is rejected as obvious in view of the combination of Takahashi (US 2002/0000532), Arney (US 6,432,526) and Russell (US 2,926,183). Applicants respectfully traverse this rejection.

Claim 11 depends from claim 8 (which is discussed above with respect to Takahashi and Arney) and differs from claim 8 in that it specifies a pH of the composition being 2-11. Nonetheless, the Office alleges that Russell discloses water soluble organic complexes having a pH of 1-9. As such, the Office has combined Russell with Takahashi and Arney in the rejection of claim 11.

While it may be true that Russell discloses complexes with such a pH range, Applicants submit that claim 11 is non-obvious over the combination of Takahashi, Arney and Russell for at least those reasons already discussed above with respect to the combination of Takahashi and Russell and/or the combination of Takahashi and Arney.


As such, Applicants request withdrawal of the obviousness rejection over claim 11 for the same reasons as asserted above for the withdrawal of the obviousness rejections over claims 1 and 8 from which claim 11 depends.

### **Conclusion**

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the rejections and passage of this case to issue.

Respectfully submitted,

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